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A. Comparison of disintegrin amino acid sequences: Contortrostatin Applagin

EAGEECDCGSPENPCCDAATCKLRPGAQCAEGLCCDQCKFMKEGTVC-RA**rgd**DVNDYCNGISAGCPRNPFH DAPANPCCDAATCKLTTGSQCADGLCCDQCKFMKEGTVC-RA**RGD**DL-DY-NGISAG----

EAGEDCDCGSPANPCCDAATCKL IPGAQCGEGLCCDQCSFIEEGTVCRIARGDDLDDYCNGRSAGCPRNPFH

EAGEDCDCGSPANP<u>CCDAATCKL</u>LPGAQCGEGLCCDQCSFMKKGTICRRA**RGD**DLDDYCNGISAGCPRNPLHA

EAGE ECDCGSPENPCCDAATCKL RPGAQCADGL CCDQCRFKKKRT I CRRARGDNPDDRCTGQSADCPRNGLYS

GKECDCSSPEN<u>PCCDAATCKL</u>RPGAQCGEGLCCEQCKFDRAGKICRIP**RGD**MPDDRCTGQSADCPRYH

B. Design of PCR primers:

Albolabrin **[rigramin**

Elegantin

Kistrin

FORWARD λ gt10

PCR-2

--DAPAN<u>PCCDAATCKL</u>TTGSQCADGLCCDQCKFMKEGTVCRRA**RGD**DL_DY_NGISAG_____ **-----**

PCR-1

REVERSE λ gt 10

C. Overlapping extension of PCR fragments:

(a) self-extendible molecule:

CN-N (approximately 1300 bp)

(b) non-self-extendible molecule:

CN-N (approximately 1300 bp)

<---3

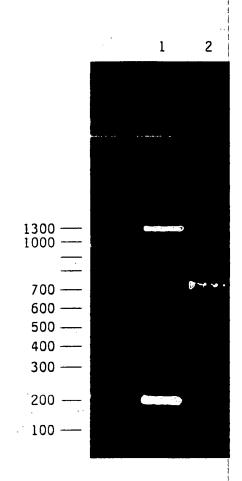
CN-C (approximately 700 bp)

CN-C (approximately 700 bp)

λgt10 reverse

^-----

λgt10 forward



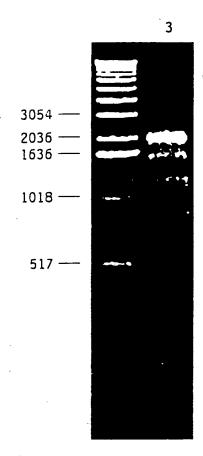


FIG. 2



FIG. 3A

5' GA ATT CGG GGT CAA TAG AGG AAG AGC TCA AGT TGG CTT GAA AGC AGG AAG AGA TTG 92 101 CCT GTC TTC CAG CCA AAT CCA GCC GCC AAA ATG ATC CAG GTT CTC TTG GT6 ACT MIQVLLVT[8] [1] CTA TGC TTA GCA GCT TTT CCT TAT CAA GGG AGC TCT ATA ATC CTG GAA TCT GGG [9] L C L A A F P Y Q G S S I I L E S G [26] AAT GTT AAT GAT TAT GAA GTA CTG TAT CCA CAA AAA GTC ACT GCA TTG CCC AAA [27] N V N D Y E V L Y P Q K V T A L P K [44] GGA GCA GTT CAG CCA AAG TAT GAA GAC ACC ATG CAA TAT GAA TTT AAA GTG AAT [45] G A V Q P K Y E D T M Q Y E F K V N [62] GGA GAG CCA GTG GTC CTT CAC CTG GAA AAA AAT AAA GGA CTT TTT TCA AAA GAT [63] G E P V V L H L E K N K G L F S K D [80] TAC AGC GAG ACT CAT TAT TCC TCT GAT GGC AGA AAA ATT ACA ACA AAC CCT CCG [81] Y S E T H Y S S D G R K I T T N P P [98] 416 425 GTT GAG GAT CAC TGC TAT TAT CAT GGA CGC ATC CAG AAT GAT GCT GAC TCA ACT [99] V E D H C Y Y H G R I Q N D A D S T [116] GCA AGC ATC AGT GCA TGC AAC GGT TTG AAA GGA CAT TTC AAG CTT CAA GGG GAG [117] A S I S A C N G L K G H F K L Q G E [134] ACG TAC CTT ATT GAA CCC TTG AAG CTT TCC GAC AGT GAA GCC CAT GCA GTC TAC [135]TYLIEPLKLS DSEAHAVY[152] AAA TAT GAA AAC GTA GAA AAA GAA GAT GAG GCC CCC AAA ATG TGT GGG GTA ACC [153]KYENVEKEDEAPKMCGVT[170]



FIG. 3B

CAG ACT AAT 1GG GAA TCA GAT GAG CCC ATC AAA AAG GCC TCT CAG TTA AAT CTT [171]Q T N W E S D E P I K K A S Q L N L [188] ACT CCT GAA CAA CAA GGA TTC CCC CAA AGA TAC ATT GAG CTT GTT GTA GTT GCA [189]T P E Q Q G F P Q R Y I E L V V V A [206] GAT CAC AGA ATG TTC ACG AAA TAC AAC GGC AAT TTA AAT ACT ATT AGA ATA TGG [207]D H R M F T K Y N G N L N T I R I W [224] GTA CAT GAA CTT GTC ACC AGA ATT TGA AAT GTT TAC AAC ATT GAG CTT TTG AAT ATT CGT [225]V H E L V N T M N V F Y R P L N I R [242] GTC TCA CTG ACT GAC CTA GAA GTT TGG TCA GAC CAA GAT TTG ACC AGA GAT TTG ACC ACC AGA GAT TTG ACC ACC ACC ACC ACC ACC ACC ACC ACC AC	riG.	ろ	D						!										-
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ACT CCT GAA CAA CAA GAA TTC CCC CAA AGA TAC ATT GAG CTT GTT GTA GTT GCA [189]T P E Q Q G F P Q R Y I E L V V V A [206] GAT CAC AGA ATG TTC ACG AAA TAC AAC GGC AAT TTA AAT ACT ATT AGA ATA TGG [207]D H R M F T K Y N G N L N T I R I W [224] GTA CAT GAA CTT GTC AAC ACT ATG AAT GTG TTT TAC AGA CCT TTG AAT ATT CGT [225]V H E L V N T M N V F Y R P L N I R [242] GTC TCA CTG ACT GAC CTA GAA GTT TTG TTG TAG GAC CAA GAT TTG ATC AAC GTG CAG [243]V S L T D L E V W S D Q D L I N V Q [260] CCA GCA GCG GCT GAT ACT TTG GAA GCA TTT GGA GAC CAG GAC TTG AGA GAC ATT GAT CGC [261]P A A A D T L E A F G D W R E T V L [278] GTG AAT CGC ATA AGT CAT GAT GAT GAT GTT TAC CAG GCC ATT GAG CTT GAT [279]L N R I S H D N A Q L L T A I E L D [296] GGA GAA ACT ATA GGA TTG GCT AAC AGG GGC ACC ATG TGC GAC CCG AAG CTT TCT [297]G E T I G L A N R G T M C D P K L S [314] ACA GGA ATT GTT CAG GAT CAT AGT GCA AAT AGT CTT TGG GAT AAT CTT TGG GAT AAT CTT TGG GAT AAT CTT TGT GAA AAT CTT TGG GAT AAT CTT TGT GAA AAT CTT TGG GAT AAT CTT TGT GAA AAT CTT TGT GAA CAG GGC ATT GAG CTT TCT [297]G E T I G L A N R G T M C D P K L S [314]	[171]Q	т	N	W	E	s	D	E	Р	I	K	K	Α	S	Q	L	N	L	[188]
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٠.)]R	AGA	R L523 AAT N	G CCC P	TTC F	D 1532 CAT H	GCC A	D 1 TAA	541 CCA 483]	Y ACA	 C	N N L550	G	I 1	S 1559	Α	 G	с 568	
٠.	CCC	AGA R	R L523 AAT N	G CCC P	D TTC F	D 1532 CAT H	GCC	TAA * [541 CCA 483]	Y ACA	ATG	N 1550 GAG 	G ATG	I GAA	S 1559 TGG	A TCT	G 1 GCA	568 GCA	
٠.	CCC	AGA R	R L523 AAT N	G CCC P	D TTC F	D 1532 CAT H	GCC	D 1 TAA	541 CCA 483]	Y ACA	ATG	N 1550 GAG 	G ATG	I GAA	S 1559 TGG	A TCT	G 1 GCA	568 GCA	
٠.	CCC	AGA R	R L523 AAT N N L577 AGT	CCC P	D TTC F	D 1532 CAT H 1586 ATC	GCC A	TAA * [541 CCA 483] 595 CAG	ACA 	ATG	N L550 GAG 	ATG	GAA	S 1559 TGG 	A TCT	GCA TCT	568 GCA 622 CTC	
[477	CCC ']P	AGA R	R L523 AAT N L577 AGT	CCC P GTG	TTC F	D 1532 CAT H 1586 ATC	GCC A	TAA * [ATA 1	541 CCA 483] 595 CAG	ACA 	ATG	N L550 GAG L604 AAT	ATG	GAA	S 1559 TGG 1613 CTG	TCT	GCA TCT	568 GCA 622 CTC	
[477	CCC ']P	AGA R	R L523 AAT N L577 AGT	CCC P GTG	TTC F	D 1532 CAT H 1586 ATC	GCC A	TAA * [541 CCA 483] 595 CAG	ACA 	ATG	N L550 GAG L604 AAT	ATG	GAA	S 1559 TGG 1613 CTG	TCT	GCA TCT	568 GCA 622 CTC	
[477	CCC ']P ACA	AGA R GGC	R L523 AAT N L577 AGT L631 GAT	CCC P GTG	TTC F TTG	D 1532 CAT H 1586 ATC 1640 GAT	GCC A TGA	TAA * [ATA 1 TCT 1	541 CCA 483] 595 CAG	ACA CCT	ATG AAT	N L550 GAG L604 AAT L658 TTT	G ATG	GAA CCT TTC	S 1559 TGG 1613 CTG 1667 CCT	TCT	GCA TCT ATC	568 GCA 622 CTC 676 CAA 730	
[477	CCC ']P ACA	AGA R GGC	R L523 AAT N L577 AGT L631 GAT	CCC P GTG	TTC F TTG	D 1532 CAT H 1586 ATC 1640 GAT	GCC A TGA	TAA * [ATA TCT	541 CCA 483] 595 CAG	ACA CCT	ATG AAT	N L550 GAG L604 AAT L658 TTT	G ATG	GAA CCT TTC	S 1559 TGG 1613 CTG 1667 CCT	TCT	GCA TCT ATC	568 GCA 622 CTC 676 CAA 730	
[477	CCC ']P ACA	AGA R GGC	R L523 AAT N L577 AGT L631 GAT L685 CCA	GCCCPPGTG	TTC F TTG GGA	D 1532 CAT H 1586 ATC 1640 GAT	GCC A TGA	TAA * [ATA TCT 1 CTA	541 CCA 483] 595 CAG CTA	ACA CCT AGA	ATG AAT AGG	N L550 GAG L604 AAT L658 TTT L712 CAC	G ATG CAA CAC CCT	GAA CCT TTC TAG	S 1559 TGG 1613 CTG 1667 CCT	TCT	GCA TCT ATC GAT	568 GCA 622 CTC 676 CAA 730 GGT	
[477	CCC ZP ACA AGA	AGA R GGC	R L523 AAT N L577 AGT L631 GAT L685 CCA	GCCPPGTG	TTC F TTG GGA	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC	GCC A TGA CCT	TAA * [ATA 1 TCT 1 CTA 1	541 CCA 483] 595 CAG 649 TCC	ACA CCT AGA	ATG AAT AGG	N L550 GAG L604 AAT L658 TTT L712 CAC	ATG CAA CAC	GAA CCT TTC TAG	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT	TCT GCT CAA	GCA TCT ATC GAT	568 GCA 622 CTC 676 CAA 730 GGT	
[477	CCC ZP ACA AGA	AGA R GGC	R L523 AAT N L577 AGT L631 GAT L685 CCA	GCCPPGTG	TTC F TTG GGA	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC	GCC A TGA CCT	TAA * [ATA TCT 1 CTA	541 CCA 483] 595 CAG 649 TCC	ACA CCT AGA	ATG AAT AGG	N L550 GAG L604 AAT L658 TTT L712 CAC	ATG CAA CAC	GAA CCT TTC TAG	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT	TCT GCT CAA	GCA TCT ATC GAT	568 GCA 622 CTC 676 CAA 730 GGT	
[477	CCC ']P ACA AGA AGA	AGA R GGC TTT	R L523 AAT N L577 AGT L631 GAT L685 CCA	GCCP PGTG CAT	TTC F TTG GGA GCC	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC	GCC A TGA CCT ATC	TAA * [ATA TCT TTC 1	541 CCA 483] 595 CAG 703 CTA 757 TCC	ACA CCT AGA GTA	AAT AGG AAT	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT	G ATG CAA CAC CCT CTA	GAA CCT TTC TAG TTT	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC	TCT GCT CAA CCA	GCA TCT ATC GAT TGC 1	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT	
[477	CCC ']P ACA AGA AGA	AGA R GGC TTT	R L523 AAT N L577 AGT L631 GAT L685 CCA	GCCPPGTG	TTC F TTG GGA GCC	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC	GCC A TGA CCT ATC	TAA * [ATA TCT TTC TTC	541 CCA 483] 595 CAG 703 CTA 757 TCC	ACA CCT AGA GTA	AAT AGG AAT	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT	G ATG CAA CAC CCT CTA	GAA CCT TTC TAG TTT	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC	TCT GCT CAA CCA	GCA TCT ATC GAT TGC 1	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT	
[477	CCC ']P ACA AGA AGA	AGA R GGC TTT GAC	R L523 AAT N L577 AGT L631 GAT L685 CCA L739 ATT	GCCPPGTG	TTC F TTG GGA GCC TAA	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC 1748 TAT	GCC A TGA CCT ATC	TAA TAA TCT TTC TTC TCA TCA	541 CCA 483] 595 CAG 483] TCC 703 CTA 757 TCC 811	ACA CCT AGA GTA ATA TCC	ATG AAT AGG AAT TTT	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT	G ATG CAA CAC CCT CTA	GAA CCT TTC TAG TAT	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC	TCT GCT CAA CCA TTT TTA	GCA TCT ATC GAT TGC TCT	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT 838 GCT	
[477	CCC PP ACA AGA AGA ATC AAC	AGA R GGC TTT GAC	R 1523 AAT N 1577 AGT 1631 GAT 1685 CCA 1739 ATT 1793 ACC	CCC P GTG CAT TCT CTG	TTC F TTG GGA GCC TAA	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC 1748 TAT 1802 CTG	GCC A TGA CCT ATC TTC	TAA TAA TCT TTC TTC TCA TCA	D 541 CCA 483] 595 CAG 649 TCC 703 CTA 757 TCC 8811	ACA CCT AGA GTA ATA TCC	ATG AAT AGG AAT TTT	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT L820 GGC	G ATG CAA CAC CCT CTA	GAA CCT TTC TAG TAC 1	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC 1829 AGC	TCT GCT CAA CCA TTT	GCA TCT ATC GAT TGC TCT 1	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT 838 GCT 892	
[477	CCC PP ACA AGA AGA ATC AAC	AGA R GGC TTT GAC AAA AAA	R L523 AAT N L577 AGT L631 GAT L685 CCA L739 ATT L793 ACC	CCC P GTG CAT TCT CTG	TTC F TTG GGA TTC TTC	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC 1748 TAT 1802 CTG	GCC A TGA CCT ATC TTC	TAA * [ATA TCT TTC CAA TTT	541 CCA 483] 595 CAG 649 TCC 703 CTA 757 TCC 811 865 ACC	ACA CCT AGA GTA ATA TCC GTT	ATG AAT TTT ATG	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT L820 GGC	G ATG CAA CAC CCT CTA	GAA CCT TTC TAG TTT TAC CAA	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC 1829 AGC	TCT GCT CAA CCA TTT TTA ACA	GCA TCT ATC TGC TCT TTT	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT 838 GCT 892	
[477	CCC ZP ACA AGA AGA ATC AAC GTC	AGA R GGC TTT GAC AAA	R L523 AAT N L577 AGT L631 GAT L685 CCA L739 ATT L793 ACC	CCC P GTG CAT TCT CTG TTT AAA	TTC F TTG GGA TTAA TTC	D 1532 CAT H 1586 ATC 1640 GAT 1694 TGC 1748 TAT 1802 CTG 1856 GGC	GCC A TGA CCT ATC TTC TCA CAT	TAA * [ATA TCT TTC CAA TTT	541 CCA 483] 595 CA 483] 595 CA 757 CC 703 CTA 757 TCC 811 84GC 865 CC 919	ACA CCT AGA GTA ATA TCC	ATG AAT TTT ATG	N L550 GAG L604 AAT L658 TTT L712 CAC L766 AAT L820 GGC L874 CAG	ATG CAA CAC CCT CTA ATG TTA	GAA CCT TTC TAG TTT TAC CAA	S 1559 TGG 1613 CTG 1667 CCT 1721 CTT 1775 ACC 829 AGC 883 AGC	TCT GCT CAA CCA TTT TTA ACA	GCA TCT ATC TGC TTT TTT 1	568 GCA 622 CTC 676 CAA 730 GGT 784 TGT 838 GCT 892 AAT	

FIG. 3D

1955 1964 1973 1982 1991 2000 AAA ATT TCA TGC TGG CTT CCC AAG ATG TAG CTG CTT CCG TCA ATA AAC AAA CTA

2009 2018 2027 TTC TCA TTC <u>AAA AAA AAA AA</u>C CCG AAT TC 3'

FIG. 4-1

ΓIG. 4	- 1						
Proprotein	domain:	•		<u> </u> 			
	1 *	10 *	20 *)	30 *	40 *	50 *
CN	MIQVLLVTL	CLAAFP	YQGSS:	ILESGN	NDYEVL	PQKVTALP	KGAVQPKY
Trigramin	MIQVLLITI	CLAVEPY	(QGSS	ILESGNI	NDYEVV	PEKVTALP	KGAVQQKY
Cat	MIQVLLVTI	CLAAFP	rqgss	ILESGN	MDYEVI	PRKVTALP	KGAVQPKY
Jararhagin							KGAVQPKY
Ht-e	•		•	l .		(PRKVTALPI	=
	1	10	120		130	140	150
CN	DUCYVUCDI	*	*	CNC! KC!	*, 1571 0051	* *	*
CN Trigramin						TYLIEPLKL: MYLIEPLEL:	
Cat	DHCYYHGRI			1	•		
Jararhagin	DHCYYHGRI	•		ľ	-		
Ht-e	DHCYYHGRI			ŀ	-		
Metalloprot	einase dom	nain:					
		200	21	0	220	230	240
0.11	50005 505	*	*		*	*	*
CN	EQQGF.PQR			•			
Trigramin Cat	EQQRF.PQR EHQKYNPFR			•		•	
Jararhagin	EQQRYDPYK						
Ht-e	EHQR						
	290	300	31		320	330	340
•	*	*	*		*	*	*
CN	LTAIELDGE	TIGLANR	GTMCD	PKLSTGI	VQDHSAI	NLWVAVTMA	HEMGHNL
Trigramin	LTATIFNGN	VIGRAPV	GGMCD	PKRSVAI	VRDHNAI	VFVVAVTM	HEMGHNL
Cat	LTAIDL.DR			,	•		
Jarahagin	LTAIDFNGP			!	•		
Ht-e	LTSIAFDEQ	IIGRAYI	GGICE	PKRSTGV	VQDHSE I	NLRVAVTM	<u>HELGHNL</u>
Disintegrin	domain:						
		420		430	440	450)
-		*		*	*	*	
CN	ETGEESDF-				•	•	
Trigramin Cat	EAGEDCDCG						
Jararhagin	EVGEECDCG EVGEECDCG				•	•	
Ht-e	EAGIECDGG						
110-6	ENGIECDGG	JLEN	PCCIA	CHICKMAP	GOYCAEG	LCCDQCKFI	INNUIVER
C-terminal o	domain:						
	490	5	00	510)	520	530
	*		*	*		*	*
Cat	NGQPCLDNY						-
Jararhagin	NGQPCLDNY			HQCYALF	GADVYEA	EDSCFKDNC	KGNYYGY)
	590	6	00				,
Cat	*	vocuc	*	4 1/4			
Cat	PGTKCADGK						
Jararhagin	PGTKCADGK	vC2NGHC	VUVAT	ΑΥ			

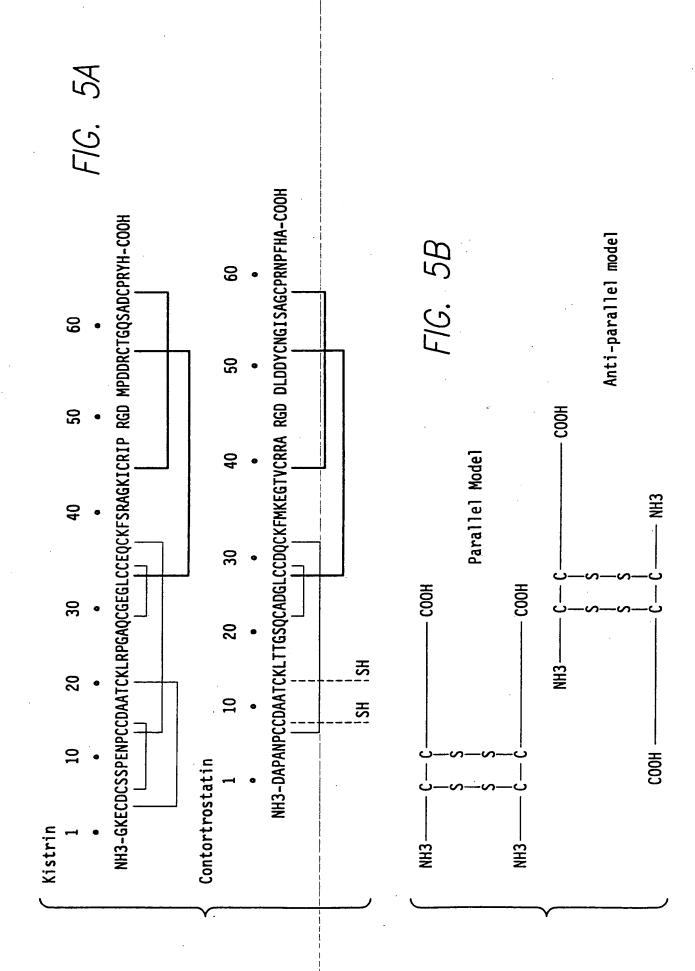
FIG. 4-2

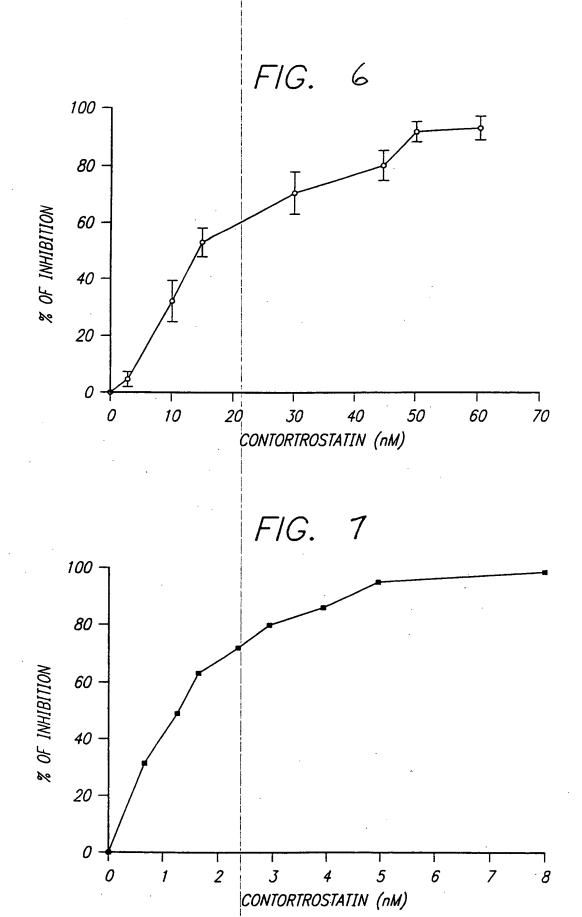
70 100 60 90 80 EDTMOYEFKVNGEPVVLHLEKNKGLFSKDYSETHYSSDGRKITTNPPVE **EDAMQYEFKVNGEPVVLHLEKNKGLFSEDYSEIHYSPDGREITAYPSVE EDAMQYELKVNGEPVVLHLGKNKGLFSKDYSETHYSPDGREITTYPLVE EDAMQYEFKVNGEPVVLHLEKNKGLFSKDYSEIHYSPDGREITTYPPVE EDTMOYELKVNGEPVVLHLEKNKGLFSKDYSETHYSFDGRKITTNPSVE** 160 170 180 190 YKYENVEKEDEAPKMCGVTQTNWESDEPIKKASQLNLTP FKYENVEKEDEPPKMCGVTQ.NWESYESTKKASQLNVTP YKYENVEKEDEALKMCGVTQ.NWESYEPIKKASOLVVTA FKYENVEKEDEAPKMCGVTQ.NWKSYEPIKKASQLAFTA FKLKNVEKEDEAPKMCGVTQ.NWESYEPIKKASDLNLNP 250 260 270 280 IRVSLTDLEVWSDQDLINVQPAAADTLEAFGD.WRETVLLNRISHDNAQL IVTTLSVLEIWSEKDLITVQ.ASAPTTLTLFGAWRETVLLNRTSHDHAQL IHVALVGLEIWSNEDKITVKPEAGYTLNA.FGEWRKTDLLTRKKHDNAQL MHVALVGLEIWSNGDKITVKPDVDYTLNS.FAEWRKTDLLTRKKHDNAQL IDILLAGIEIWSNGDLINVQPASPNTLNS.FGEWRETDLLKRKSHDNAQL 350 360 370 380 390 400 410 <u>GISH</u>DGNQCHCDANSCIMSEELREQLSFEFSDCSQNQYQTYLTDHNPQCMLNEPLRTDIVSTPVSGNELL <u>GMHH</u>DEDKCNCN..TCIMSKVLSRQPSKYFSECSKDYYQTFLTNHNPQCILNAPLRTDTVSTPVSGNELL GINHDSGYCSCGDYACIMRPEISPEPSTFFSNCSYFECWDFIMNHNPECILNEPLGTDIISPPVCGNELL <u>GIHH</u>DTGSCSCGDYPCIMGPTISNEPSKFFSNCSYIQCWDFIMNHNPECIINEPLGTDIISPPVCGNELL <u>GIHH</u>DTDSCSCGGYSCIMSPVISDEPSKYFSDCSYIQCWEFIMNQKPQCILKKPLRTDTVSTPVSGNELL 460 470 480 RARGD.DLDDYCNGISAGCPRNPFHA*

IARGD.DLDDYCNGRSAGCPRNPFHA - ASMSECDPAEHCTGQSSECPADVFHK **ASMSECDPAEHCTGOSSECPADVFHK** VSMVDRN.DDTCTGQSADCPRNGLYG*

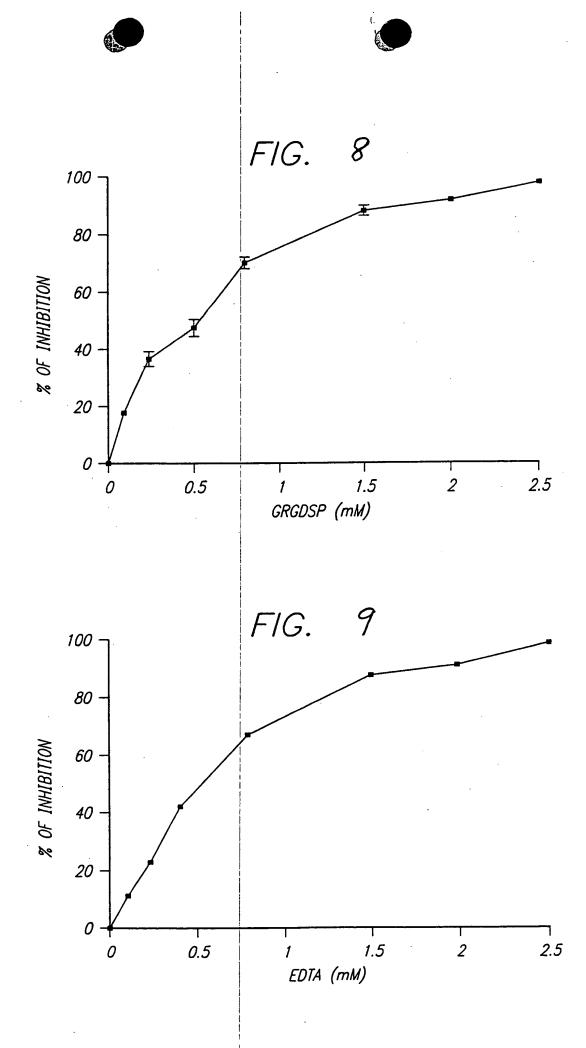
> 540 550 560 580 570

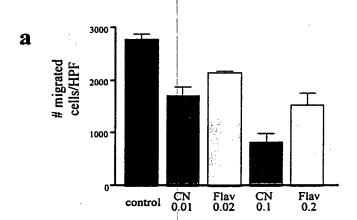
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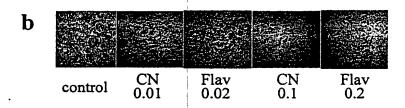




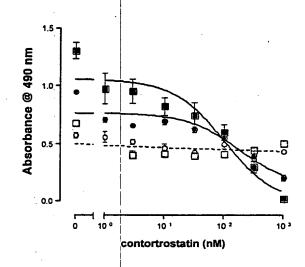
· 8







F16. 10



F/G. 11

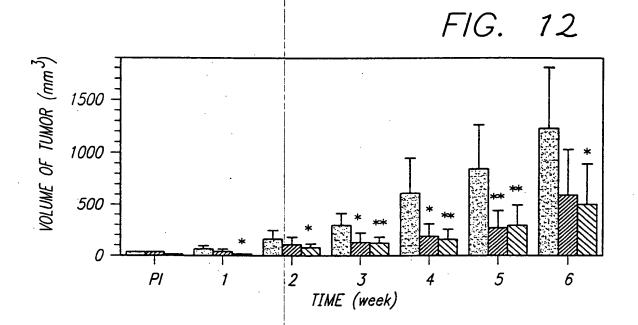




FIG. 13A

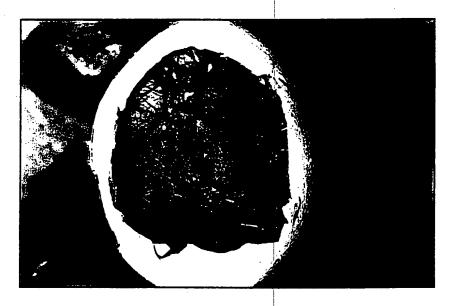


FIG. 13B

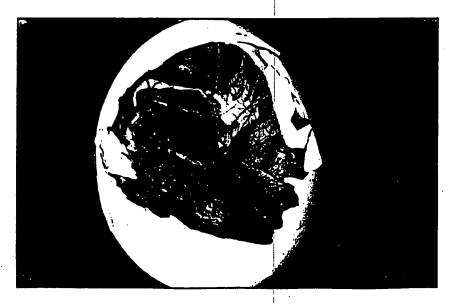
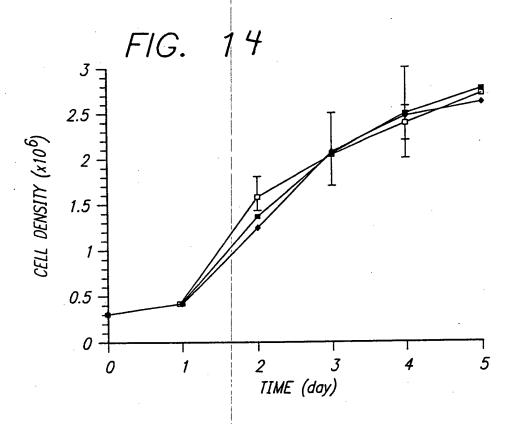
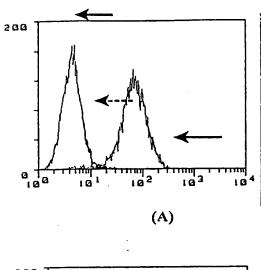
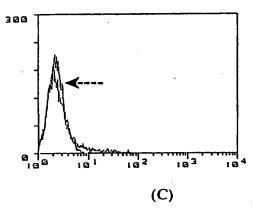
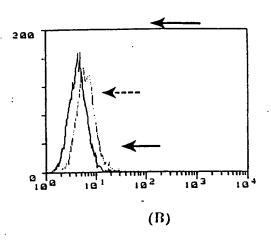


FIG. 13C









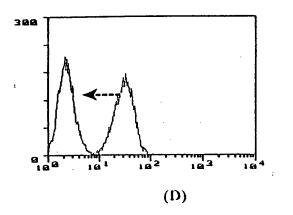


FIG. 15

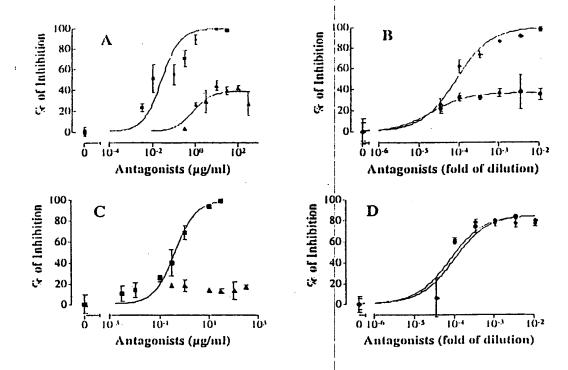


FIG. 16

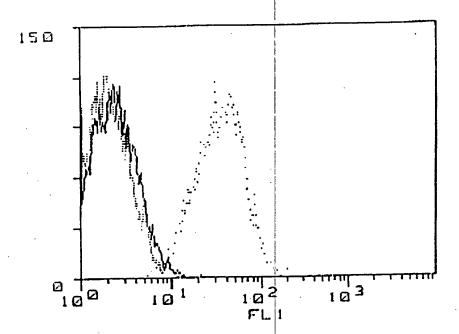


FIG. 17

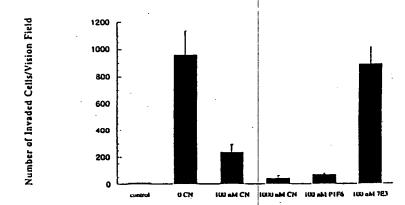


FIG. /8

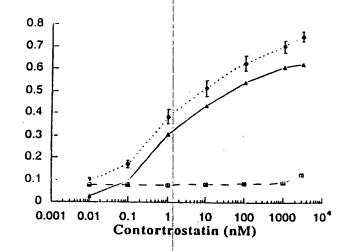
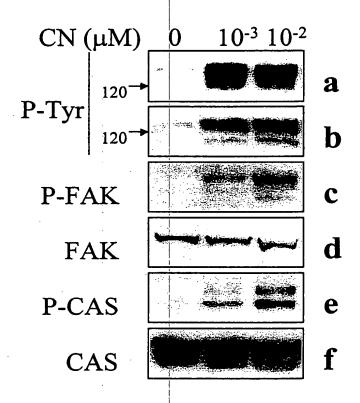
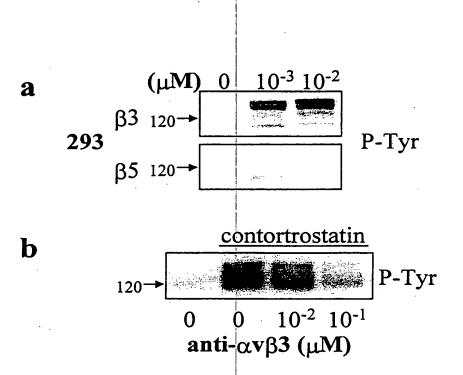


FIG. 19





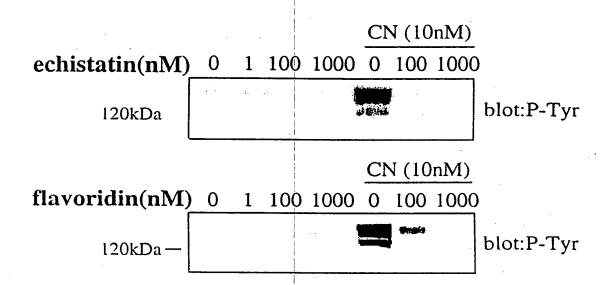
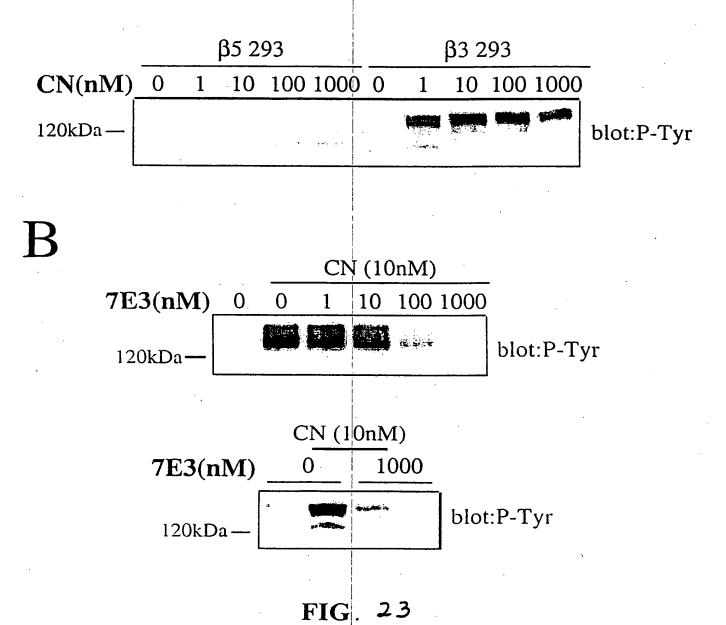


FIG. 22

A



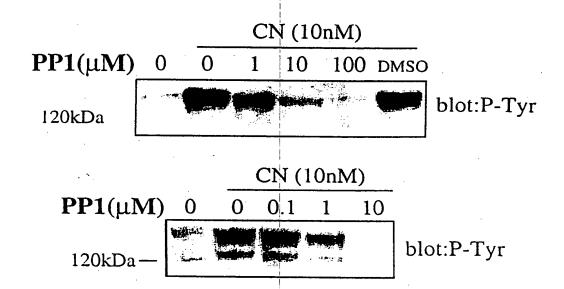


FIG. 24

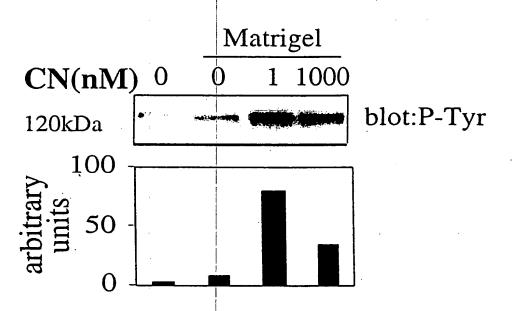


FIG. 25

